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DESCRIPTION AND HABITS OF A SUPPOSED NEW SPECIES OF LEPIDOPTEROUS LARVA OF THE GENUS SPHINX.

BY THOMAS G. GENTRY, GERMANTOWN, PA.

Des.—Body cylindrical, tapering gradually anteriorly, 12-jointed, exclusive of head. Head sub-elliptical, thickly punctured, moderately pubescent and of a yellowish brown color. Oral appendages largely developed. Antennæ 3-jointed, cylindrical, acuminate, the basal joint very long and quite thick. A dark purplish curved band passes from the crown of the head to the right antenna. Prothoracic segment surmounted by a transversely elongated, punctated, corneous saddle, concolorous with the head.

General color dark purple, relieved by two series of dorso-lateral gold-colored dots, ranging from the posterior half of the metathoracic to the seventh abdominal segment (each series containing twenty-seven points). The anterior half of the second, to the seventh abdominal segments inclusive, each furnished with a single, much larger, similarly colored one. Above the line of the prolegs, intermediate between this and that of the spiracles, on each side, is a row of irregularly shaped yellow spots.

True legs moderately elongate, acuminate, 3-jointed and yellowish brown in hue, the tarsal joint being armed with a short, recurved, black claw: the whole slightly invested with short black hairs. The membraneous legs of the 3rd, 4th, 5th and 6th abdominal segments cylindrical, thickish, abruptly truncate at base, and clothed with short reddish brown hairs, and armed on the inferior aspect interiorly with a double row of stiff, ferruginous hairs, for adhering to objects. Anal pro-

leg sub-quadrangular, warty and pubescent, and surmounted by a triangular supra-anal plate of a dark purplish color, with the apex directed posteriorly.

Prothoracic and first and abdominal rings are furnished each with a pair of transversely oval, yellowish spiracles. Inferior aspect of the larva is marked with clusters of white spots, relieving the monotony of the purple. Last abdominal segment surmounted by a moderately long recurved horn, yellowish brown in color, and bearing scattered gland like bodies, which manifest a tendency to become spines. Length nearly 3 inches. Taken in Germantown during the first week of September, while feeding upon the leaves of *Polygonum pennsylvanicum*.

This larva, belonging, as it does, to the family Sphingidæ, is undoubtedly rare, as it is the only one that I have met with in all my entomological rambles; nor can I find in any of the works at my command a description, still less a figure thereof. In some respects it resembles the full-grown larva of *Sphinx euphorbia*, described and figured in "Transformation of Insects," by Dr. Duncan; in others it differs very materially therefrom. In the Euphorbia Sphinx the yellow points are scattered promiscuously over the dorsal and lateral surfaces of the body, but in the specimen under consideration they are arranged with some view to order. There is a still further resemblance in the irregular spots which flank the sides, just beneath the line of stigmata, and in the general color, the former being black, and the latter a rich dark purple. It differs from the former in being devoid of the three longitudinal lines of carmine tint, which is a prominent feature of it, and also in being more tapering anteriorly.

There is one character in the life history of this larva which struck me as peculiarly novel and interesting, and which deserves to be placed upon record. Instead of assuming the peculiar Sphinx-like attitude in a state of rest, (whence the popular name of Sphinx is derived), and which is so familiar to entomological students as well as the outside world, it curves its body, bringing the head and tail in close proximity, reminding one of the position which is so easily and readily taken by the larva of *Cimbex ulmi*, Reek.

It cannot be denied that this is its natural posture in a state of inaction. To assure myself that a position which seemed so natural and easy to the worm was not an occasional one, I was permitted in the

intervals of relaxation and freedom from duty, to give it prolonged and careful attention for many consecutive days. In not a single instance did it assume the attitude so eminently characteristic of the Sphinx family.

One other peculiar trait of its nature it was my happy fortune to observe. Caterpillars, as is well known, have a variety of ways for defending themselves against the annoyances and assaults of their enemies. While some are provided with hairs which act as irritating causes when brought into contact with highly sensitive surfaces, others are furnished with fearful looking spines which infuse a feeling of horror into their enemies, even when they have not the power to act as irritants. This species, presenting an almost perfectly smooth bodily surface, assuredly makes up from its lack of integumentary appendages, in being armed with a pair of powerful tridentate mandibles, which it uses freely and indiscriminately.

Hundreds of Lepidopterous larvæ have been handled with impunity by the writer, and this new method of self-defence, even where manifested, has been so slight as not to attract much attention. In this case the insect seemed unwilling to permit any familiarities. The softest touch of the finger was sharply resented. On one occasion the writer's finger was seized and held on to with such pertinacity, as to require considerable effort at extrication. The smart from this squeezing lingered for many minutes afterwards—a suitable punishment for his temerity. Even when laid upon the palm of the hand it continued its rapid twitchings from side to side, and with gaping jaws, as if still conscious of hidden danger, ready to vent the full measure of its infuriated passion upon anything that should come within their scope.

In conclusion, I am sorry to say that my *vivarium* having been unduly tampered with during my absence, this caterpillar, which was always exceedingly restless under confinement, effected its escape. On the discovery of the fact dilligent search was commenced, but no clue to its whereabouts could be obtained—it, doubtless, like many of its unfortunate kind, having become a rich morsel for some insect-loving bird. I trust to be able during the gradually approaching season to secure similar larvæ and bring them to the imago or moth condition.

HESPERIA PAWNEE. *N. sp.*

BY G. M. DODGE, GLENCOE, DODGE CO., NEBRASKA.

Male expands 1.45 inches. Primaries above fulvous. Subcostal, submedian and subdorsal veins black at the base. Stigma black and conspicuous, followed by a dusky shade. A small black line at the extremity of the disk is preceded by a yellowish white or semi-transparent spot in the disk; a similar spot, triangular in shape, appears between the first and second median veinlets at their divarication, and two others between the sixth and seventh subcostal veinlets. The outer margin is broadly bordered with brown, which is finely powdered with fulvous scales toward the apex.

Two nearly square fulvous spots between the last subcostal and first median veinlets, separate an oval brown patch that lies at the extremity of the disk, from the border. Costal edge blackish. Fringe white, dusky toward the apex.

Secondaries fulvous, bordered with brown; broadly and darkest along the anterior edge, narrowly on the outer edge, where it appears as cuneiform spots between the veinlets, and broadly again along the inner edge, where it is sprinkled with fulvous. Most of the veins on both wings are black. Underside of both wings pale yellow. Primaries black at base, having a black line corresponding to the stigma.

Inner margin brown, preceded by a large whitish patch. Five pale whitish spots near the apex, another in the disk, and one between the first and second median veinlets. Fringe white at the anal angle, brown tipped with white at the apex. Secondaries have a whitish spot in the disk, and are crossed by a nearly straight row of small whitish spots. Head and thorax greenish yellow. Body black. Abdomen, breast and palpi yellowish white. Antennæ black and yellow above, white tipped with chestnut below.

The spots on the underside of secondaries sometimes obsolete.

♀ light brown above, with a slight purplish reflection. Primaries sprinkled with fulvous scales near the base and inner angle. There is a large, square, white spot in the disk, and an unequal, curved row of nine white spots extend from the costa—beginning about two-tenths of an inch from the apex—to the submedian vein. The first three spots are narrow

and equal, the fourth and fifth are small and square and lie nearest the outer edge of the wing, the sixth is larger and triangular, the seventh largest and square, the eighth and ninth are irregular in shape and partly fulvous.

Secondaries darkest along the anterior margin. A curved row of five whitish yellow spots, of which the second and third are longest, crosses the wing beyond the disk, and in the disk is a small yellow spot. A yellow streak precedes the last median veinlet, running to the outer margin. Fringe of all the wings white. Below, on the primaries, the same white spots appear as above, except that the eighth and ninth are merged in a large whitish patch situated as in the male. A brown patch covers part of the base and inner margin, and extends to the center of the wing. On the secondaries three small white spots appear near the apex. The ground color of both wings is yellowish white, most deeply tinged with fulvous near the costal border of the primaries. Fringes white. Head, thorax and body brown above. Abdomen and palpi white. Antennæ black above, whitish tipped with red below.

This species was taken at Glencoe, Nebraska, upon high rolling prairie, from the first to the middle of September.

The writer can exchange a few males for United States diurnals, with those desirous of seeing the types.

LIST OF NEUROPTERA

COLLECTED BY J. PETTIT, GRIMSBY, ONT.

Psocus striatus,
Pteronarcys biloba?
Calopteryx maculata,
Lestes rectangularis,
" forcipata,
" unguiculata,
Agrion saucium,
" irene,
" iners,
Aeschna constricta,
Plathemis trimaculata,
Libellula luctuosa,
Libellula 4-maculata,
" pulchella,
" semifasciata,
Diplax intacta,
" rubicundula,
Chauliodes pectinicornis,
" maculatus,
" angusticollis,
Polystoechotes punctatus,
Myrmeleon obsoletus,
Panorpa rufescens.

ON SOME OF OUR COMMON INSECTS.

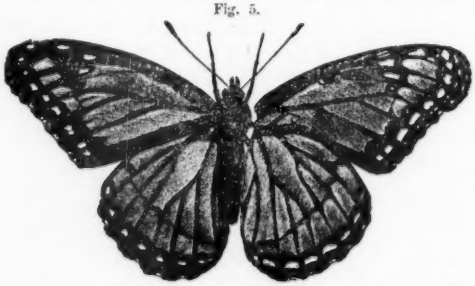
13. *THE DISIPPUS BUTTERFLY—Limenitis disippus*, Godt.

BY THE EDITOR.

In the annual report of the Entomological Society of Ontario, for 1872, this insect is referred to at some length, and from the material there given much of the following has been condensed. In the perfect or winged state it is tolerably common throughout Ontario, and in this condition it very closely resembles our common red or *archippus* butterfly, see CAN. ENT., vol. v, p. 4, from which, however, it may always be distinguished by its smaller size and by a black band which crosses the hind wings, which band is entirely wanting in the *archippus*.

Fig. 5 represents the *disippus* butterfly. The ground color of the wings is a warm orange red, with the veins heavy and black, and the margins spotted with white. In the figure the left wings represent the upper surface, while those of the right, which are slightly detached from the body, show the underside; the two surfaces differ but

Fig. 5.

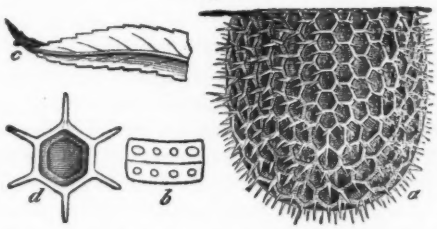


very little in color or markings. The butterfly appears on the wing rather late in the summer, when it may frequently be seen hovering about willow bushes, on which the female usually deposits her eggs, that being the favorite food plant of the larva.

The egg, which is well shown in fig. 6, is a very beautiful object; *a* represents it highly magnified, while at *c* it is shown of the natural size and in its usual position on a willow leaf. At *d* one of the minute cells

of the egg is shown still more highly magnified. Mr. C. V. Riley, who was the first to describe this egg, says that at first it is of a pale yellow color, but that it soon becomes gray as the enclosed larva develops. The

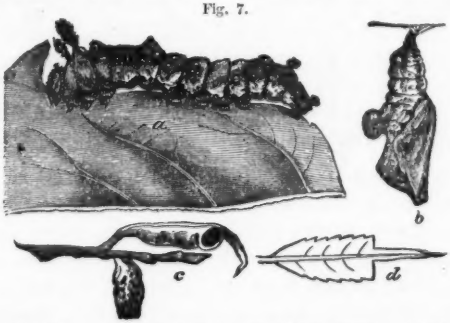
Fig. 6.



eggs are usually deposited singly near the tip of the leaf, generally on the under side, although sometimes on the upper, and occasionally two or even three are placed together.

In a few days the young larva appears. As it issues from the egg it measures only one-tenth of an inch long, has a large yellowish brown head, and a pale yellowish brown body, the latter with darker streaks and a few pale dots and warts, the warts having pale spines or bristles issuing from them. The larva attains full growth in about one month from the time of hatching, when it appears as shown at *a*, fig. 7. It is then about one inch and a quarter long, with a rather large head, which is flattened in front and divided by a central depressed line into two lobes, each of

Fig. 7.



which is tipped with a green tubercle or short horn. The head is of a pale green color, with two dull white lines down the front, and roughened with a number of small green and greenish white tubercles.

The body above is of a deep, rich green color, with patches and streaks of dull white ; the second segment is smaller than the head, and thickly covered with whitish tubercles ; the third segment, which is dull whitish green, is raised considerably above the second, and has a flat ridge above with a long brownish horn on each side of it thickly covered with very short white and brown spines ; the fourth segment has a similar ridge, with a small tubercle on each side, each tipped with a bunch of short whitish spines. All the segments behind the fourth have two tubercles, one on each side, of varying size and in a line with the long horns on the third segment, each being covered with a cluster of whitish spines. The tubercles on seventh, eighth, tenth and eleventh segments have a streak of white at their base, and each segment behind the fourth, excepting the ninth, has several smaller tubercles of a bright blue color. A large whitish patch covers nearly the whole of the ninth and parts of the eighth and tenth segments, and another of a similar character covers the second, third and part of the fourth. A white stripe extends along each side, close to the under surface, from the fifth to the terminal segments, in which is set a small cluster of whitish spines about the middle of each segment, from the sixth to tenth inclusive. On each side of the seventh, eighth and tenth segments is an elongated blackish spot, just above and behind the spiracles ; the latter are rather large, oval, and of a brownish black color.

The under side is whitish green, with a central dull white stripe on the hinder segments ; the feet are brown, ringed with brownish black ; the prolegs pale greenish, faintly tipped with brown.

The chrysalis, fig. 7, *d*, has a curious mixture of colors—brown, grey, flesh color and white—and is characterized by a remarkable, thin and almost circular projection sticking out from the middle of its back, which has been likened to a Roman nose.

There are two broods of this insect during the year ; the larvæ of the second brood scarcely attain half their growth when they hybernate, and complete their developement the following spring. On the approach of inclement weather the little caterpillar constructs a curious case in which to dwell, see *c*, fig. 7, which has been likened to the leaf of a miniature pitcher plant ; having first, by means of silken cords, firmly secured the stem of the leaf it uses to the twig on which it grows. These cases are frequently found upon willow bushes, and also on the American poplar during the winter season.

This butterfly is subject to the attack of several parasites ; one a tiny dark four-winged fly, infests the eggs ; another four-winged fly of a larger size, and a still larger two-winged fly attack the insect in its caterpillar state.

MICRO-LEPIDOPTERA.

BY V. T. CHAMBERS, COVINGTON, KENTUCKY.

Continued from Page 11, vol vi.

ERRATA.—Ante v. 5, p. 229, for *Laruna* read *Laverna*.

DRYOPE, *gen. nov.*

Primaries lanceolate ; the costa enters the margin about the middle discal cell narrow and closed by a nearly straight discal nervure. The subcostal sends off a long curved branch from about its middle, and which attains the margin behind the end of the cell. From the end of the cell the subcostal bends somewhat obliquely upwards to the costal margin. The median is furcate from the end of the cell, both branches being short and bending somewhat suddenly downwards to the dorsal margin, the inner branch being straight and continuous with the discal vein. The discal vein emits five branches, the superior going to the costal margin, the next furcate before the tip with one of the branches to each margin ; the three others go to the dorsal margin.

Secondaries narrowly lanceolate, costal vein short, subcostal very long, simple, attaining the costal margin near the tip ; cell unclosed ; median vein with three nearly equidistant branches. No discal vein but an independent branch which arises near the median and attains the dorsal margin before the apex.

Head smooth ; vertex short and broad ; forehead obtusely rounded ; face smooth, narrow and much retreating ; tongue long, clothed at the base. No maxillary palpi ; labial palpi short, porrected, densely scaled, almost tufted beneath ; no ocelli ; eyes large, but partly concealed by some long scales pendant from the swollen basal joint of the antennæ, which are about two thirds as long as the primaries, with the joints closely set and microscopically pubescent.

This genus must approach closely to *Chauliodus*, Treit., but I can not reconcile either Mr. Stainton's or Dr. Clemens' diagnosis of the genus with the characters of this insect as to the labial palpi and neuration, nor do I discern any tooth-like projections of scales along the inner margin of the primaries. In ornamentation, too, the insect evidently approaches *C. canicinctella*, Clem. closely, though evidently distinct from it.

D. Murtfeldtella. N. sp.

Head, palpi, thorax and basal third of the primaries pale yellowish, the remainder of the primaries being of the same general hue, but darker and more reddish, the line between the two shades distinct (that is, they do not pass gradually into each other).

Al. ex. ½ inch. Kentucky in June. Also, received from Miss Mary E. Murtfeldt, of St. Louis.

In many specimens (which should, perhaps, be regarded as a distinct species) the colors are much more distinct, and the hue varies somewhat, the basal portion of the primaries having a pinkish cast and the remainder more of a brownish purple : some of the scales in the apical part of the wing tipped with hoary or pale yellow ; these specimens are also decidedly larger than the others.

OENOE, *gen. nov.*

Head and face rough, the tuft projecting in front ; tongue short, concealed by the palpi ; maxillary palpi long, folded ; labial palpi drooping, the second joint one-third longer than the third, and with projecting bristles at the apex ; eyes globose ; no ocelli ; antennae nearly two-thirds as long as the wings, filiform ; the terminal joints with the scales arranged in whorls, and the basal joint with a few long hair-like scales depending over the eyes.

Anterior wings lanceolate ; discal cell closed by a straight discal nervure ; costal vein short ; the subcostal from before the middle sends a branch to the margin behind the middle ; another short branch behind the middle, from the end of the cell, is slightly bent upwards to the margin ; the discal vein emits two branches from a common point : the upper branch attains the costal margin, the second branch sends a branch to the dorsal margin and becomes furcate before the tip, delivering a

branch to the costal and one to the dorsal margin. The median divides into two branches at the end of the cell, both branches going to the dorsal margin ; submedian simple, rather long.

Posterior wings linear lanceolate ; the costal margin is excised from about the middle to the tip ; the costal vein attains the margin at the excision ; the subcostal is nearly straight and attains the margin at about the apical fourth ; discal cell unclosed ; a disco-central nervule is faintly indicated through the cell, becoming distinct in the apical half of the wing, when it sends two branches to the dorsal margin and attains the costal margin just before the apex ; the median vein is coincident with the dorsal margin from the basal third to beyond the middle.

This genus is nearly allied to *Eudarcia*, *Diachorisia*, but especially to *Hybroma*, Clem., differing, however, from all somewhat both in the trophi and neuration.

O. hybromella. N. sp.

Palpi brown and silver gray intermixed ; head yellowish white ; antennæ grayish fuscous, becoming more silvery towards the tip ; thorax and basal half of the forewings maroon brown, with darker brown scattered scales and small spots ; remainder of the wing white, with scattered brown scales which upon the costa and in the apical portion of the wing are condensed into loose, rather large, irregular blotches. *Alar ex.* ⅓ inch. Kentucky.

PERIMEDE, *gen. nov.*

This insect is allied to *Stilbosis*, Clem., *Laverna*, &c. It was captured in my library, where it had most probably escaped from some of my breeding cages, but I can give no account of its larval history.

No maxillary palpi ; labial palpi slender, rather sparingly scaled, reaching the vertex, widely divergent ; antennæ faintly pectinated, more than half as long as the wings ; basal joint suddenly clavate towards the tip. Head and face smooth, with the scales appressed ; face rather broad.

Wings long and narrow, with long ciliae.

Primaries longer than the body, narrowly lanceolate. Discal cell closed, the discal vein giving off one branch to the posterior margin near the tip. The costal is very short. The subcostal sends two branches to

the margin before the end of the cell, one from the end of it and one behind the cell, and attains the margin just before the tip. The median sends three branches to the dorsal margin. (Probably the discal branch above mentioned should more properly be considered the terminal portion of the median and the discal described as having no branches.) Submedian simple.

Secondaries linear lanceolate. The costal vein is very long and close to the margin; the subcostal attains the tip, its basal half being obsolete. Discal cell unclosed; median sub-dividing into four equidistant branches, the first of which attains the dorsal margin before the middle, and the last one not far from the tip.

Imago long, slender, and the single species described below has small raised tufts of scales upon the primaries.

P. erransella. N. sp.

Antennae grayish brown; face and palpi pale grayish, tinged with purple; primaries grayish brown, tinged with purple, with three small spots of raised black scales, the two first of which are margined behind and the third one before with pale ochreous; one of these tufts is near the dorsal margin before the middle, one about the middle of the disc, and one at the end of it. Under surface and legs whitish, with four distinct dark brown spots on each side of the abdomen, and the joints of the legs gray brown. *Al. ex.* nearly ½ inch. Kentucky.

LIST OF COLEOPTERA OF ST. LOUIS COUNTY, MISSOURI.

BY S. V. SUMMERS, M. D., NEW ORLEANS,

(Continued from Page 192, Vol. v.)

EUAESTHETUS, *Grav.*
americanus, *Er.*
OXYPORUS, *Fab.*
vittatus, *Grav.*
OSORIUS, *Latr.*
latipes, *Er.*

BLEDIUS, *Steph.*
semiferrugineus, *Lec.*
troglodytes, *Er.*
pallipennis, *Er.*
fumatus, *Lec.*
nitidicollis, *Lec.*

BLEDIUS, *Steph. (continued)*
annularis, *Lec.*
analis, *Lec.*
OXYTELUS, *Grav.*
insignitus, *Grav.*
sculptus, *Grav.*
nitidulus, *Grav.*
PLATYSTETHUS, *Mann.*
americanus, *Er.*
TROGOPHLOEUS, *Mann.*
morio, *Er.*
insculptus, *Fauvel.*
ANTHOPHAGUS, *Grav.*
brunneus, *Say.*

HOLOLEPTA, *Payk.*
fossularis, *Say.*
HISTER, *Linn.*
binotatus, *Lec.*
interruptus, *Beauv.*
depurator, *Say.*
abbreviatus, *Fab.*
americanus, *Payk.*
bimaculatus, *Linn.*
carolinus, *Payk.*
lecontei, *Mars.*
immunis, *Er.*
foedatus, *Lec.*
harrisii, *Kirby.*
sedecimstriatus, *Say.*
PHELISTER, *Mars.*
subrotundus, *Mars.*
vernus, *Mars.*
TRIBALUS, *Er.*
americanus, *Lec.*

ACIDOTA, *Steph.*
subcarinata, *Er.*
OLOPHRUM, *Er.*
rotundicolle, *Er.*
emarginatum, *Er.*
LATHRIMAEUM, *Er.*
sordidum, *Er.*
CORYPHIUM, *Steph.*
notatum, *Lec.*
GLYPTOMA, *Er.*
costale, *Er.*
LISPINUS, *Er.*
laevicauda, *Lec.*

HISTERIDÆ.

EPIERUS, *Er.*
pulicarius, *Er.*
regularis, *Lec.*
BACANIUS, *Lec.*
punctiformis, *Mars.*
DENDROPHILUS, *Leach.*
punctulatus, *Lec.*
PAROMALUS, *Er.*
affinis, *Lec.*
bistriatus, *Er.*
conjunctus, *Lec.*
SAPRINUS, *Leach.*
assimilis, *Er.*
seminitens, *Lec.*
patruelis, *Lec.*
fraternus, *Lec.*
ACRITUS, *Lec.*
politus, *Lec.*
fimetarius, *Lec.*
exiguus, *Lec.*

SCAPHIDIIDÆ.

SCAPHIDUIM, *Oliv.*
piceum, *Mels.*
4-guttatum, *Say.*

SCAPHIDIIDÆ *(continued)*.

CYPARIUM, *Er.*
flavipes, *Lec.*
SCAPHISOMA, *Leach.*
convexum, *Say.*
suturale, *Lec.*
TOXIDIUM, *Lec.*
gammaroides, *Lec.*
compressum, *Zimm.*

TRICHOPTERYGIDÆ.

TRICHOPTERYX, *Kirby.*
haldemani, *Lec.*

PHALACRIDÆ.

PHALACRUS, *Payk.*
politus, *Mels.*
OLIBRUS, *Er.*
apicalis, *Lec.*
OLIBRUS, *Er. (continued.)*
nitidus, *Lec.*
bicolor, *Er.*
pusillus, *Lec.*

NITIDULIDÆ.

CERCUS, *Latr.*
abdominalis, *Latr.*
COLASTUS, *Er.*
truncatus, *Lec.*
morio, *Er.*
semitectus, *Er.*
CARPOPHILUS, *Leach.*
pallipennis, *Lec.*
hemipterus, *Steph.*
antiquus, *Mels.*
luridus—
CONOTELUS, *Er.*
obscurus, *Er.*
EPURAEA, *Er.*
helvola, *Er.*
vicina, *Lec.*
NITIDULA, *Fab.*
bipustulata, *Fab.*
ziczac, *Say.*
PROMETOPIA, *Er.*
sexmaculata, *Er.*
OMOSITA, *Er.*
colon, *Er.*
PHENOLIA, *Er.*
grossa *Er.*
STELIDOTA, *Er.*
geminata, *Er.*
octomaculata, *Lec.*
AMPHICROSSUS, *Er.*
ciliatus, *Er.*
PALLODES, *Er.*
silaceus, *Er.*
CRYPTARCHA, *Shuck.*
ampla.
IPS, *Fab.*
fasciatus, *Say.*
4-signatus, *Say.*

MONOTOMIDÆ.

BACTRIDIUM, *Lec.*
nanum, *Lec.*

MONOTOMA, *Hbst.*
americanum, *Aube.*

TROGOSITIDÆ.

NEMOSOMA, *Latr.*
cylindricum, *Lec.*
TEMNOCHILA, *Westw.*
viridicyanea, *Lec.*
virescens, *Er.*
ALINDRIA.
cylindrica, *Er.*
teres, *Lec.*

TROGOSITA, *Oliv.*
mauritanica, *Oliv.*
corticalis, *Mels.*
dubia, *Mels.*
nana, *Mels.*
castanea, *Mels.*
laticollis, *Horn.*
bimaculata, *Mels.*

COLYDIIDÆ.

DITOMA, *Ill.*
quadriguttata, *Lec.*
SYNCHITA, *Hellwig.*
granulata, *Say.*
nigripennis, *Lec.*
AULONIUM, *Er.*
parallelipipedum, *Er.*

PROLYCTUS, *Zimm.*
exaratus, *Mels.*
CERYLON, *Latr.*
unicolor, *Lec.*
castaneum, *Say.*

A DISSERTATION ON NORTHERN BUTTERFLIES.

BY WILLIAM COUPER, MONTREAL.

(Continued from Page 37).

The confinement of the genus *Chionobas* to high latitudes affords an example regarding distribution of species. Their food being lichens peculiar only to the Alpine regions, must confine them within a limited range. Mr. Scudder, in his "Revision of the hitherto known species of the genus *Chionobas*, of North America"—Proceed. Ent. Soc. Philad., vol. 5, pp. 26-28—gives them three or four localities; but these are either arctic, sub-arctic or Alpine. He places them also in Alpine districts—on

high mountains in temperate latitudes in Europe and America. Mr. Scudder asks "what relations of structure do the species of these different localities and varying range of habitat bear to one another?"

Specific relations are just what we want to have elucidated, but it is difficult to obtain material for this work while butterflies of the genus *Chionobas* are confined to frigid, unaccessible localities. Mr. Scudder deserves the gratitude of entomologists for his able Revision of the *Chionobas*, and in defining the species known to occur in our Northern and Alpine regions. I may here remark that I did not see a species of this genus during my two visits to Anticosti, and I cannot account for their absence from the island.

After returning from Labrador in 1867, I sent Mr. Scudder ♀ specimens of a *Pieris* taken on the south coast of the Lower St. Lawrence, at Natashquan. His answer, dated Oct. 1st, 1867, is as follows: "*Pieris:* "I am inclined to think this is *P. frigida*, Scudd., described from Upper "Labrador, but I cannot be positive without seeing some ♂ ♂ from your "collection." I had no ♂ ♂ at that time, and therefore could not send them; but I took it for granted that the species was his *Pieris frigida*.

I made a subsequent collection on the Island of Anticosti and Labrador, in 1872, and captured a number of the above *Pieris* at Fox Bay, as well as on the south coast of Labrador. The specimens were distributed to my subscribers under the name of *P. frigida*, according to Mr. Scudder's determination. The gentlemen receiving the species (all reputed entomologists) did not doubt that it was anything else than Scudder's *P. frigida* until my return from Anticosti this year. I am now informed by Mr. Grote that the *Pieris* is not *frigida*, but *Ganoris oleracea* var. *borealis*.

Now, I have before me Mr. Scudder's paper in Proceed. Boston Soc. of Nat. Hist., vol. viii, Sept., 1861, in which I quote as follows:

"*Pieris oleracea*, Boisd.
"*Pontia oleracea*, Harris.
"*Pieris cruciferarum*, Boisd.
"*Pontia casta*, Kirby.

"The butterflies described by Harris, Boisduval and Kirby under the "above-mentioned names are one and the same insect. It is found "inhabiting the northern and eastern portions of North America, reaching "rarely as far south as Pennsylvania, and extending eastward to Nova

"Scotia, at least as far west as Lake Superior, while in the North it is "found as high as the Great Slave Lake in the Hudson Bay Company's "territory, and even, according to Kirby, to Latitude 65° N. on the "McKenzie River."

I have now the mortification of finding that my Anticosti specimen of what I claim to be a *Pieris* is now *Ganoris oleracea;* but a var. to be called *borealis*. Mr. Grote says that the species resembles *frigida*, but that the peculiar elongated wings of *frigida* are wanting.

With a knowledge of the history of the Anticosti *Pieris* or *Ganoris*, whichever it may be, I am prepared to state that the former does not agree with the habits of *Pieris oleracea*, which is double brooded in Canada and quadrupled in the south, while that of Anticosti has but one brood during the season.

The egg of *oleracea* is pear-shaped or oval, of a yellow green color, and ribbed longitudinally with about fifteen sharp edged lines. The eggs are deposited singly, rarely more than one on a leaf, on the *underside*. The egg of the Anticosti *Pieris* is not pear-shaped, but oblong, pointed at each end, flesh colored, smooth and without ribs. The insect never deposits eggs underneath the leaves, but on the upper surface of its food plant *(Turritis stricta)*, and I have counted six on a single leaf. The caterpillar of the Anticosti *Pieris* is also different from that of *oleracea*. It approaches the color of that of *P. rapæ*, but without dorsal or lateral stripe, and is pubescent. In fact, it is as different from *oleracea* as the caterpillar of the latter is from *rapæ*. It occurs to me that the argument I have advanced regarding the *Papilio* of the Island applies also to this Anticosti *Pieris*. I find that after examining a number, with few exceptions, the colors are constant; and I cannot agree with Mr. Scudder that the upper surface is "supplied with obsolete spots similarly situated to "those on the upper surface of *P. rapæ* of Europe."

It is possible that the *Pieris oleracea* of the south and west may be but races of this northern form. Mr. Scudder says that "No possible "step in the gradation from one extreme to the other is wanting, and both "extremes are found equally among numerous examples from as widely "distant places as Massachusetts and the Great Slave Lake; although "the suite of specimens with which I have made my comparisons seems "to indicate that the paler forms are more commonly met with in the "more southern localities, and that more heavily marked ones are the "characteristic forms of the north."

Mr. Scudder, speaking of a white butterfly taken in Eastern Labrador, says that it is very closely allied to, but distinct from *P. oleracea*. In a note following the description of *P. frigida*, he adds: "It would be "exceedingly difficult to distinguish this species except by immediate "comparison with both sexes of *oleracea*; the differences are more easily "seen than described, although the extreme limits of variation of *oleracea* "do by no means permit us to include within its boundaries this com- "paratively persistent form; it is more heavily marked than any specimen "of *oleracea* which I have seen."

The *Pieris* which Mr. Grote has named *Ganoris borealis* is found along two hundred miles of sea-coast on Anticosti; it is quite abundant on the north shore of the Gulf, terminating in a western direction in the neighborhood of Seven Islands. It occurs throughout the north, on the Labrador Islands, into the Straits of Belle Isle, and probably Newfoundland. I am aware that *P. oleracea* occurs at Quebec, and it may extend on both sides of the St. Lawrence opposite the mouth of the River Saguenay; but it is not found below the latter river, towards the Gulf. It seems curious that *Pieris frigida* or *Ganoris borealis* should, like *Papilio brevicauda*, be confined to the north coast and islands of the Gulf of St. Lawrence, and that the caterpillar of the Anticosti *Pieris* is differently marked and the habits of the butterfly contrary from that of *oleracea*. What is the object of the study of eggs and larvæ of insects? Is it not for the purpose of determining the value of species?

The object in claiming primitive source for some of the northern butterflies, arises mainly from the fact that in them we discover permanency in form and color, while their geographical range is limited in accordance with the distribution of their food plants. That species found scattered over defined circuits are generally tending towards the equator. That many of these are but figurative races removed from their original habitat, and have varied through the influence of food and climate.

In this connection I quote an extract from Geographical Distribution of some Genera of Insects, by Francis Walker, F. L. S., Vol. iv, No. 10 of CAN. ENT.: "In studying the fauna of a mountain it is most suitable "to begin with the top, and to trace it downward, where the agencies or "forms of life become successively more numerous and complicated in "their mutual adaptations and limitations, all being as wheels which serve "to regulate the great living mechanism of which they are the parts. In "like manner, in noticing the faunas of the two primary mountains into

"which the earth is divisible, their summits being the poles and the "equator their common base, it is advisable to begin with the arctic "species or with those which have ascended to the highest latitudes. The "difference in soil, in vegetation and in elevation facilitate or hinder the "migration and settlement of insects, and help to effect the variety of "distribution, which is one of the chief attractions in the aspects of "nature."

MONTREAL BRANCH OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO.

This branch was organized November 11th, 1873. The following officers were elected for the ensuing year:—President, W. Couper; Vice President, M. Kollmar; Secretary-Treasurer, F. B. Caulfield; Council—G. J. Bowles, P. Knetzing, C. W. Pearson, W. Hibbins, jr.

The meetings of the Society are held at the residence of the President, No. 67, Bonaventure Street, Montreal, on the first Wednesday evening in each month.

ENTOMOLOGICAL COLLECTING TOUR.

We would call especial attention to a notice of an Entomological collecting tour about to be undertaken by Dr. S. V. Summers, of New Orleans, La., which will be found on the outside page of cover of our magazine. This is one of the most extensive undertakings of the sort we have ever heard of, and is well worthy of the patronage of Entomologists. The number of specimens guaranteed is extremely liberal, and the returns will no doubt well repay those who invest in the proffered shares. We are duly authorized by Dr. Summers to receive monies for shares on his account, so that any of our readers who may prefer negotiating with us will please communicate with our Secretary, Mr. J. H. McMechan.

TO OUR PATRONS.

At a special meeting of the Council of the Entomological Society of Ontario, held on the 19th of February, 1874, Mr. J. Williams, being about to remove to Montreal, tendered his resignation as Secretary-Treasurer, which was accepted with regret. Mr. J. H. McMechan having kindly consented to undertake the duties of the office, was unanimously elected as his successor. Our friends and correspondents will please bear this change in mind, and address all remittances and business communications to J. H, McMechan, Secretary-Treasurer, London, Ontario.

CORRESPONDENCE.

PIERIS RAPÆ.—About the last of September, 1873, I netted the first Rape Butterfly that I have ever seen in this part of the country—township of Dunn, county of Haldimand. It is a male butterfly, as described fig. 8, vol. 5, No. 3, CANADIAN ENTOMOLOGIST.—F. C. L.

VANESSA G. ALBUM.—I have lately received from the north-west coast of British America a specimen of *Vanessa G. album.* I do not remember hearing of its being found so far from the Atlantic before—W. H. EDWARDS.

BOOK NOTICES.

Illustrations of the Zygaenidæ and Bombycidæ of North America, by R. H. Stretch, San Francisco, California. Parts 8 and 9, with three colored plates.

The Cincinnati Quarterly Journal of Science, Vol. i, No. i, 8vo., pp. 96.

Catalogue of the Phalaenidæ of California, No. 2, by A. S. Packard, jr., M. D., 8vo., pp. 40, with one photograph plate. From the Proceedings of the Boston Soc. Nat. Hist., Vol xvi.

Nature, to February 12, 1874.

Science Gossip, February, 1874.

Newman's Entomologist, February, 1874.

The Zoologist, February, 1874.

Le Naturaliste Canadien, Fevrier, 1874,

The Western Rural, Chicago, to March 7, 1874.

Prairie Farmer to March 7, 1874.

Indiana Farmer to Feb. 28, ,1874.

Canada Farmer, to March 2, 1874.

Maine Farmer to Feb. 14, 1874.